

CLAIMS

1. A display device comprising a pair of opposite substrates, a group of electrostatically chargeable colored particles present between the pair of substrates, a transparent first electrode, and a second electrode, wherein the group of colored particles is capable of traveling in a manner to or not to shut off light incident on or passing through the first electrode in accordance with voltage applied across the first and second electrodes for displaying an image.

2. The display device according to claim 1, which has a light source for emitting the light.

3. The display device according to claim 1, wherein the group of colored particles is capable of traveling so as to be displaced in a plan view in a manner to or not to shut off the light.

4. The display device according to claim 2, which has a color filter operative to permit light from the light source to pass therethrough for color display.

5. The display device according to claim 4, wherein the color filter is disposed on a surface of at least one of

the pair of substrates.

6. The display device according to claim 4, wherein the color filter is disposed on a surface of the first electrode.

7. The display device according to claim 4, wherein the color filter is disposed on a light exit surface of the light source.

8. The display device according to claim 2, wherein the light source is configured to emit any one of red light, green light and blue light on a time-sharing basis.

9. The display device according to claim 2, wherein the light source is configured to emit light only for color display.

10. The display device according to claim 1, wherein at least one of the pair of substrates comprises a resin film.

11. The display device according to claim 1, which has a reflective plate for reflecting light which is operative to reflect incident extraneous light for displaying white.

12. The display device according to claim 11,

wherein the reflective plate has a light scattering property.

13. The display device according to claim 1, wherein: the pair of substrates are both transparent; one of the substrates has an inwardly oriented surface formed with a projecting-depressed member defining a depression and a pair of projections on opposite sides of the depression; and the first electrode is formed on a bottom portion of the depression, while the second electrode formed on top portions of the pair of projections.

14. The display device according to claim 13, wherein: the projections and the pair of depressions define border portions therebetween, each of the border portions being shaped into a sloped surface; a surface extending from the sloped surface to the top portion of each of the projections is formed with a light reflective plate; and the second electrode is formed on the light reflective plate.

15. The display device according to claim 14, wherein the second electrode is formed on the reflective plate with an insulator intervening therebetween.

16. The display device according to claim 1, wherein the pair of substrates define therebetween a space in a gaseous phase.

17. A method of driving a display device including a pair of opposite substrates, a group of electrostatically chargeable colored particles present between the pair of substrates, a transparent first electrode, and a second electrode,

the method comprising applying voltage across the first and second electrodes to cause the group of colored particles to travel in a manner to or not to shut off light incident on or passing through the first electrode in accordance with the applied voltage for displaying an image.

18. The method according to claim 17, wherein the display device has a light source for emitting the light, the light source being configured to emit any one of red light, green light and blue light on a time-sharing basis.

19. The display device according to claim 1, further comprising a group of transparent particles present together with the group of colored particles between the pair of substrates, the group of transparent particles being electrostatically chargeable to have a polarity opposite to that of the colored particles, wherein

the group of colored particles and the group of transparent particles are capable of traveling between the first and second electrodes so as to transpose each other in a

manner to or not to shut off light incident on or passing through the first electrode in accordance with voltage applied across the first and second electrodes for displaying an image.

20. The display device according to claim 19, which has a light source for emitting the light.

21. The display device according to claim 19, wherein the group of colored particles and the group of transparent particles are capable of traveling so as to be displaced in a plan view in a manner to or not to shut off the light.

22. The display device according to claim 19, wherein when the group of transparent particles occupies substantially an entire area of a pixel in a plan view, a reflective member located behind the group of transparent particles reflects extraneous light to display white.

23. The display device according to claim 19, which has a color filter operative to permit the light to pass therethrough for color display.

24. The display device according to claim 20, wherein when the group of transparent particles occupies substantially an entire area of a pixel in a plan view while

occupying a major plane of the pixel, a reflective plate located behind the light source or a scattering plate located in front of the light source reflects extraneous light to display white.

25. The display device according to claim 20, wherein the light source is configured to emit any one of red light, green light and blue light on a time-sharing basis.

26. The display device according to claim 20, wherein the light source is configured to emit light only for color display.

27. The display device according to claim 19, wherein at least one of the pair of substrates comprises a resin film.

28. The display device according to claim 19, wherein: the pair of substrates are both transparent; the first electrode in a film form, an insulating film and the second electrode in a film form and having an opening are positioned in this order between the pair of transparent substrates; and the group of colored particles and the group of transparent particles are encapsulated in the opening of the second electrode.

29. The display device according to claim 28, wherein the insulating film is a color filter.

30. The display device according to claim 29, which has a light source for emitting the light which is located externally of the substrate positioned closer to the first electrode.

31. The display device according to claim 19, wherein each of the transparent particles has a larger diameter than each of the colored particles.

32. The display device according to claim 19, wherein the pair of substrates define therebetween a space in a gaseous phase.

33. The method according to claim 17, wherein the display device further comprises a group of transparent particles present together with the group of colored particles between the pair of substrates, the group of transparent particles being electrostatically chargeable to have a polarity opposite to that of the colored particles,

the method comprising applying voltage across the first and second electrodes to cause the group of colored particles and the group of transparent particles to travel between the first and second electrodes so as to transpose

each other in a manner to or not to shut off light incident on or passing through the first electrode in accordance with the applied voltage for displaying an image.

34. The method according to claim 33, wherein the light source is configured to emit any one of red light, green light and blue light on a time-sharing basis.